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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,255	11/09/2001	Carl B. Frankel	5181-96400	2558

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EXAMINER

PROCTOR, JASON SCOTT

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/008,255	Applicant(s) FRANKEL ET AL.	
	Examiner Jason Proctor	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/25/02</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claims 1-34 have been presented for examination.

Claims 1-34 have been rejected.

Request for Status

The Examiner acknowledges Applicant's request for status of the instant application received by the Office on November 26, 2004. The Examiner presumes that this office action is a sufficient indication of the status of the application and deems no further action necessary.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1, 15, 27, and 31 are provisionally rejected under the judicially created doctrine of double patenting over claims 1 and 12 of copending Application No.

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10/008,270. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: a distributed simulation system comprising two nodes, each node using a different simulator program ("simulation mechanism"), wherein the first node and the second node communicate using a grammar.

Claim 27 of the instant application recites the apparatus that employs the method of claim 12 of the copending application.

Claim Rejections - 35 USC § 101

35 U.S.C. § 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-34 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. MPEP 2106 reads as follows (emphasis added):

A claim that requires one or more acts to be performed defines a process. However, not all processes are statutory under 35 U.S.C. 101. *Schrader*, 22 F.3d at 296, 30 USPQ2d at 1460. **To be statutory, a claimed computer-related process must either: (A) result in a physical transformation outside the computer** for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan (discussed in i) below), **or (B) be limited to a practical application within the technological arts** (discussed in ii) below). See *Diamond v. Diehr*, 450 U.S. at 183-84, 209 USPQ at 6 (quoting *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1877))

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and

For such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts. See *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192, 209 USPQ at 10). See also *Alappat* 33 F.3d at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) at 114-19). **A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result;** i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See *AT&T*, 172 F.3d at 1358, 50 USPQ2d at 1452. Likewise, a machine claim is statutory when the machine, as claimed, produces a concrete, tangible and useful result (as in *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601) and/or when a specific machine is being claimed (as in *Alappat*, 33 F.3d at 1544, 31 USPQ2d at 1557 (in banc)). For example, a computer process that simply calculates a mathematical algorithm that models noise is nonstatutory. However, a claimed process for digitally filtering noise employing the mathematical algorithm is statutory.

The invention of claims 1-14 recites a distributed simulation system that could be embodied as software within a single computer apparatus. The invention of claims 27-30 recites a similar apparatus. As such, the claimed invention does not result in a physical transformation outside the computer. Further, the claimed invention results in "the first node and second node communicate at least signal values during the simulation using a grammar", which does not constitute a concrete, tangible, and useful result. As such, the inventions of claims 1-14 and 27-30 are directed to nonstatutory subject matter.

The Examiner respectfully suggests specifically claiming that the first and second nodes are embodied on separate computers, whereby communication between the nodes is expressly recited as communication between computers. Such limitations would establish that the invention results in data communication between computer systems, thus a physical transformation outside the computer.

The invention of claims 31-34 recite the method employed by the system of claims 1-14 and are directed to nonstatutory subject matter for at least the reasons given above regarding claims 1-14.

Claims 15-29 recite "a carrier medium" comprising various computer software components. The specification (page 30, lines 12-18) teaches that a carrier medium is, among other definitions, "transmission media or signals such as electrical, electromagnetic, or digital signals, conveyed via a communication medium such as a network and/or a wireless link." This use of the term "carrier medium" establishes that a carrier medium is not tangible. As such, claims 15-29 recite computer software that is not tangibly embodied on a computer readable medium.

The Examiner respectfully suggests claiming the inventions of claims 15-29 as tangibly embodied on a computer readable medium, not including a "carrier medium" as defined by the specification.

To expedite a complete examination of the instant application the claims rejected under 35 U.S.C. § 101 (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 6, 10-14, 20, 24-26, 29-30, and 33-34 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 6 and 20 recite limitations including the registered trademark Superlog®. This use of a trademark is not a clear definition as required by 35 U.S.C. § 112, second paragraph. See MPEP 2173.05(u).

6. Claims 10 and 24 recite limitations including the trademark Java™. This use of a trademark is not a clear definition as required by 35 U.S.C. § 112, second paragraph. See MPEP 2173.05(u).

7. Claims 11, 25, 29, and 33 recite a phrase similar to “the first simulation mechanism includes a hardware implementation of the first portion and code for interfacing to the hardware”. It is unclear whether “hardware implementation” is a software simulation of hardware or tangible hardware. It is unclear whether the code interfaces with a software simulation or with tangible hardware.

8. Claims 14, 26, 30, and 34 recite that “the first simulation mechanism includes an emulator configured to emulate the first portion”. It is unclear how these claims further limit the claims from which they depend, all of which recite limitations similar to “a first node configured to simulate a first portion of a system under test using a first simulation mechanism”. It is unclear how “emulation” differs from “simulation” in this context.

Claims not specifically mentioned stand rejected by virtue of their dependence.

Claim Interpretation

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In the interest of compact prosecution, examiner makes the following claim interpretations in order to apply prior art to the claims. See *Ex parte Ionescu*, 222 USPQ 537 (Bd. Pat. App. & Inter. 1984).

Regarding claims 6 and 20, the phrase "Superlog" is interpreted as "hardware description language".

Regarding claims 10 and 24, the phrase "Java" is interpreted as "a portable, object-oriented language".

Claims 11, 25, 29, and 33 are interpreted as including a simulation mechanism for simulating a hardware device and code for interfacing with the simulated hardware device.

Claims 14, 26, 30, and 34 are interpreted as including hardware for assisting the simulation.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-2, 14-16, 26-28, 30-32, and 34 are rejected under 35 U.S.C. § 102(b) as being anticipated by US Patent No. 5,901,903 to Feinberg et al. (Feinberg).

Regarding claim 1, Feinberg teaches a distributed simulation according to the claimed invention. In particular, Feinberg teaches a distributed simulation with a

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plurality of nodes, the nodes are configured to simulate portions of a system under test, the simulator programs on different nodes use different instruction code, and the nodes communicate during the simulation (Figs. 2-4; column 3, lines 38-46; column 4, lines 48-67). It is inherent that instruction code for the Windows NT™ operating system differs from instruction code for the Sun Solar 15™ operating system. It is inherent that computer programs communicate using a grammar.

Additionally, although this feature is not specifically claimed, Feinberg teaches “simulation agnosticity” by exhibiting “Simulation component B” which operates on a “black box”, an unknown and unspecified simulation platform for measuring M1A1 tank operations, yet nevertheless participates in the larger distributed simulation system.

11. Regarding claim 2, Feinberg teaches that the simulations model different portions of the larger system (Fig. 2, Simulation Components A-D).

12. Regarding claim 14, Feinberg teaches hardware for assisting the simulation (column 4, lines 23-46), referred to as an ASIC or ROM.

13. Claims 15-16 recite a computer program according to the system of claims 1-2 and are therefore rejected for the same reasons given above regarding claims 1-2.

14. Claim 26 recites a computer program according to the system of claim 14 and is therefore rejected for the same reasons given above regarding claim 14.

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15. Claims 27-28 recite an apparatus with means for performing the functionality of the system of claims 1-2 and are therefore rejected for the same reasons given above regarding claims 1-2.

16. Claim 30 recites an apparatus with means for performing the functionality of the system of claim 14 and is therefore rejected for the same reasons given above regarding claim 14.

17. Claims 31-32 recite the method employed by the system of claims 1-2 and are therefore rejected for the same reasons given above regarding claims 1-2.

18. Claim 34 recites the method employed by the system of claim 14 and is therefore rejected for the same reasons given above regarding claim 14.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 3-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Feinberg as applied to claim 2 above, and further in view of US Patent No. 5,911,533 to Sano et al. (Sano).

Regarding claims 3-6, Feinberg does not explicitly teach simulating models using register-transfer level models or hardware verification language models. Feinberg does

teach behavioral models (column 6, lines 21-37). Feinberg is clearly concerned with verifying that the behavior of the simulation components (models) is correct.

Simulation of an electronic device using register-transfer level models, behavioral models, and hardware verification language models is extremely well known in the art. To wit, Sano teaches a verification support system which simulates a model using register-transfer level models, which is both a behavioral model and a hardware verification language model (column 10, lines 55-63; column 12, lines 19-25). It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to use technology well known in the art for the use of simulation and modeling, such as register-transfer level models, behavioral models, and hardware verification language models when implementing a distributed simulation system as taught by Feinberg. Motivation to do so would be found in the nature of the problem, that of simulating an electronic circuit, as well as the knowledge of a person of ordinary skill in the art, since the use of these technologies for the simulation and modeling of electronic circuits is extremely well known.

21. Regarding claims 7-10, official notice is taken that writing programs coded in a programming language and compiled for execution, such languages comprising C, C++, and Java™, is extremely well known in the art. Feinberg teaches a preferred embodiment including the Java™ programming language (column 3, lines 46-59), however it would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention that C or C++ would be suitable programming languages.

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Motivation to choose one language over another would be found in the nature of the problem, such which language is most conducive to simulating the system being verified, as well as the knowledge of a person of ordinary skill in the art, as a person of ordinary skill often has more expertise with one programming language over another.

22. Regarding claims 11-13, Feinberg does not teach simulating a hardware implementation. However, Sano teaches modeling a device conforming to the IEEE-1364 specification (column 24, lines 49-59). The combination and motivation used to reject claims 11-13 are the same as those used to reject claims 3-6. In that combination, it would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention that different nodes of a distributed simulation system should perform simulations of different portions of the overall IEEE-1364 device, and likewise different portions of whatever electronic device was being verified.

23. Claims 17-20 recite a computer program according to the system of claims 3-6 and are therefore rejected for the same reasons given above regarding claims 3-6.

24. Claims 21-24 recite a computer program according to the system of claims 7-10 and are therefore rejected for the same reasons given above regarding claims 7-10.

25. Claim 25 recites a computer program according to the system of claim 14 and is therefore rejected for the same reasons given above regarding claim 11.

26. Claim 29 recites an apparatus with means for performing the functionality of the system of claim 11 and is therefore rejected for the same reasons given above regarding claim 11.

27. Claim 33 recites the method employed by the system of claim 11 and is therefore rejected for the same reasons given above regarding claim 11.

Conclusion

Art considered pertinent by the examiner but not applied has been cited on form PTO-892.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin J Teska can be reached on (571) 272-3716. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

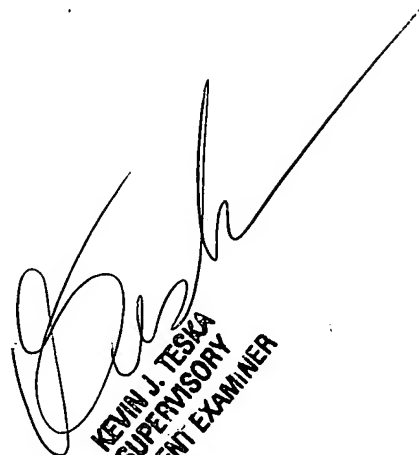
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Jason Proctor
Examiner
Art Unit 2123



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